

REMARKS

Claims 1-2 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 09-176769 (JP '769). This rejection is respectfully traversed.

Claims 1 and 2 each are amended to recite a composition that includes 0.1 to 0.39 wt% of Mg, 0.01 to 0.50 wt% of Cu, and 0.01 to 0.15 wt% of Mn. Claims 1 and 2 are also amended to call for a critical upsetting ratio of the alloy is greater than or equal to 43%, and that $0.79 \cdot (\text{wt\% of Mn}) + 0.26 \cdot (\text{wt\% of Mg}) \leq 0.22$. This numerical expression is based on the coefficient 0.79 (Mn) and the coefficient 0.26 (Mg) shown in Figure 4 of the present application. No new matter has been added.

More specifically, Figure 4 of the present application shows the multiple regression analysis results of the relationship between the critical upsetting ration as the evaluation item of caulking properties and the alloy components. The critical upsetting ratio is significantly affected by the Mg content and the Mn content, as described in paragraphs [0040] and [0041] of the present application. Further, the attached Reference Figure 1 shows the relationship between the expression $0.79 \cdot (\text{wt\% of Mn}) + 0.26 \cdot (\text{wt\% of Mg})$ using the coefficients shown in the table in Figure 4 and the critical upsetting ration (%).

In Reference Figure 1, the horizontal axis indicates the value of $0.79 \cdot (\text{wt\% of Mn}) + 0.26 \cdot (\text{wt\% of Mn})$, and the vertical axis indicates the critical upsetting ratio (%). The plot numbers shown in Reference Figure 1 indicate the alloys Nos. 1 to 10 shown in Figure 1 of the present application, and supplemental data Nos. 11 to 15 as comparative examples. The supplemental data Nos. 11 to 15 are arbitrarily selected from the ranges disclosed in the cited reference JP'769.

JP'769 allegedly overlaps the alloy composition, but does not disclose the critical upsetting ratio. The applicants of the present application, therefore, have measured the critical upsetting ratios of the supplemental data Nos. 11 to 15 arbitrarily selected from the range disclosed in JP'769. Reference Figure 2 shows the alloy compositions and the critical upsetting ratios of the supplemental data Nos. 11 to 15.

As is clear from Reference Figure 1, alloy Nos. 1 to 6, 3, and 9 according to the present invention and the supplemental data Nos. 11 to 15 (comparative examples) clearly belong to different groups. When the value indicated by the horizontal axis is x and the value indicated by the vertical axis is y , alloy Nos. 1 to 6, 8, and 9 according to the present invention belong to a first group approximated by $y = -100.46x + 65.55$ ($R^2 + 0.84$, linearly approximated statistically), and the supplemental data Nos. 11 to 15 belong to a second group approximated by $y = -12.60x + 43.52$ ($R^2 + 0.51$, almost linearly approximated statistically). Because the comparative alloy Nos. 11 to 15 are arbitrarily taken from JP '769, Applicants respectfully assert that the claimed invention provides unexpected results in comparison to JP '769 and, therefore, is unobvious.

Furthermore, Applicants respectfully assert that if the Mn content exceeds 0.3 wt%, corrosion resistance decreases since intergranular corrosion tends to occur. This

is different from the claimed invention because claims 1 and 2 recite a claimed range of 0.01 to 0.15 wt% of Mn, which is less than 0.3 wt%. Further, although the present application describes that the Mn content is preferably 0.3 wt% or less, the Mn content has been limited to the range of 0.01 to 0.15 wt%, as recited in claims 1 and 2, in view of the range of examples.

Moreover, although alloy No. 3 has a value of $0.79 \cdot (\text{wt\% of Mn}) + 0.26 \cdot (\text{wt\% of Mg})$ within the range of the claimed invention, it should be noted that alloy No. 3 has an Mg content (0.46 wt%) outside the claimed range (0.1 to 0.39 wt%). If the Mg content is 0.4 wt% or more, it is difficult to obtain a desired product shape during extrusion. Therefore, Claims 1 and 2 recite a Mg content in the range of 0.1 to 0.39 wt%.

Lastly, Applicants respectfully assert that JP'769 provides detailed evaluations of abrasion resistance and machinability, but does not evaluate caulking properties. The applicants of the present application have evaluated the critical upsetting ratio as an alternative property of caulking properties, and found that the value of $0.79(\text{wt\% of Mn}) + 0.26(\text{wt\% of Mg})$ significantly affects the critical upsetting ratio as shown in Figure 4 of the present application.

The minimum upsetting ratio of the alloys according to the present invention shown in Figure 1 is 43.1%. In this case, the value of $0.79 \times \text{Mn} + 0.26 \times \text{Mg}$ is 0.22 (upper limit). In contrast, the supplemental data Nos. 11 to 15 which were arbitrarily chosen from the teachings of JP'769 have a value of $0.79(\text{wt\% of Mn}) + 0.26(\text{wt\% of Mg})$ of more than 0.22, as shown in Reference Figure 1. That is, the supplemental data Nos. 11 to 15 belong to a group differing from the group according to the present invention.

Accordingly, Applicant respectfully asserts that claims 1 and 2 of the present application are not obvious in view of JP'769.

Reconsideration and withdrawal of this rejection, therefore, is respectfully requested.


CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: September 12, 2006

By:

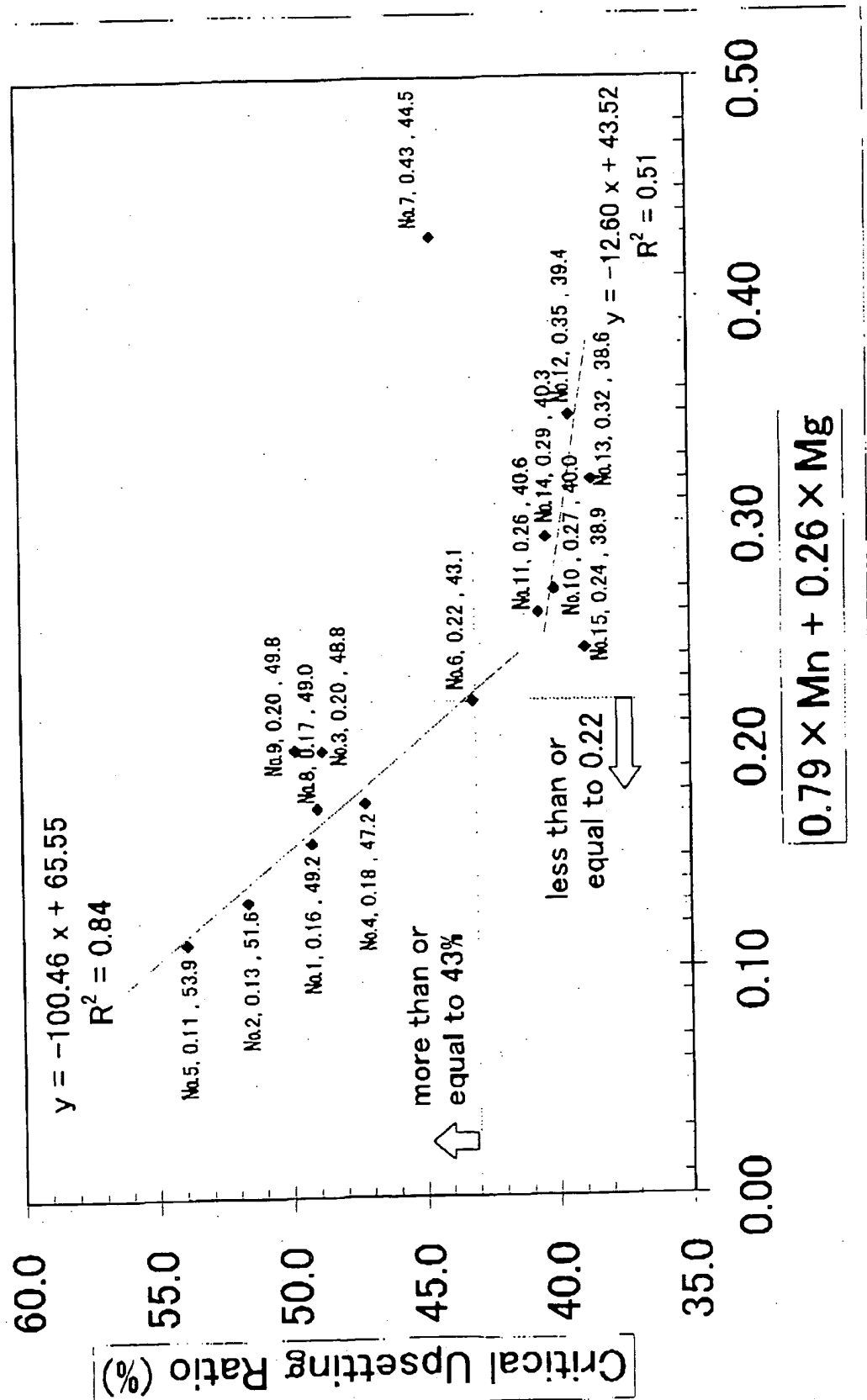

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REFERENCE FIGURE 1



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REFERENCE FIGURE 2

	NO.	COMPONENTS (%)								CRITICAL UPSETTING RATIO (%)
		Si	Fe	Cu	Ti	Mn	Mg	Cr	Zn	
COMPARATIVE EXAMPLE	11	3.85	0.28	0.15	0.03	0.16	0.51	0.15	0.01	40.6
	12	4.96	0.29	0.16	0.04	0.24	0.61	0.14	0.00	39.4
	13	3.97	1.06	0.14	0.03	0.20	0.62	0.10	0.01	38.6
	14	4.17	0.29	0.96	0.03	0.18	0.58	0.10	0.01	40.3
	15	4.59	0.30	0.15	0.03	0.11	0.60	0.10	0.01	38.9